

## Subject Index

### *Acinetobacter*

A cold-active esterase with a substrate preference for vinyl esters from a psychrotroph, *Acinetobacter* sp. strain no. 6: gene cloning, purification, and characterization 255

### *Acinetobacter calcoaceticus* (NCIMB 9871)

Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101

### Acylation

Selectivity of penicillin G acylase towards phenylacetic acid derivatives in amide bond synthesis in toluene 73

### Additives

Stabilization of various  $\alpha$ -chymotrypsin forms in aqueous-organic media by additives 141

### Adsorbent resin

Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101

### *Agrobacterium tumefaciens*

Construction and characterization of chimeric enzymes of the *Agrobacterium tumefaciens* and *Thermotoga maritima*  $\beta$ -glucosidases 43

### Antifungal natural products

Enzymatic deglycosylation of enfumafungin, a triterpene glycoside natural product, and its chemically synthesized analogues 27

### AOT/isooctane

Synthesis of galacto-oligosaccharides in AOT/isooctane reverse micelles by  $\beta$ -galactosidase 109

### *Arthrobacter* sp.

Mesoporous molecular sieve (MCM-41) as support material for microbial cell immobilization and transformation of 2,4,6-trinitrotoluene (TNT): a novel system for whole cell immobilization 17

### *Aspergillus niger*

Microbiological transformations 50: selection of epoxide hydrolases for enzymatic resolution of 2-, 3- or 4-pyridyloxirane 217

### Asymmetric Baeyer–Villiger oxidation

Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101

### Bioleaching of pulp

Bioleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205

### Biodiesel fuel

Production of biodiesel fuel from triglycerides and alcohol using immobilized lipase 53

### Bioreactors

Influence of the immobilization process on the activity of  $\beta$ -galactosidase bound to Nylon membranes grafted with glycidyl methacrylate. Part 1. Isothermal behavior 175

Influence of the immobilisation process on the activity of  $\beta$ -galactosidase bound to nylon membranes grafted with glycidyl methacrylate. Part 2. Non-isothermal behaviour 191

### Biotransformation

Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101

Biotransformation of the fungistatic sesquiterpenoid isoprobo-*yan-9 $\alpha$ -ol* by *Botrytis cinerea* 249

Biotransformation of phenolic compounds by the cultured cells of *Catharanthus roseus* 275

### *Botrytis cinerea*

Biotransformation of the fungistatic sesquiterpenoid isoprobo-*yan-9 $\alpha$ -ol* by *Botrytis cinerea* 249

### Bound

Preparation and characterization of YADH-bound magnetic nanoparticles 283

### Calcination

Some factors affecting the immobilization of penicillin G acylase on calcined layered double hydroxides 65

### Calf pregastric lipase

Determining the regio- and typo-selectivity of calf pregastric lipase 147

### Capsaicin

Preparation of a new pepper: chemoenzymatic synthesis of capsaicin oligosaccharide and 8-nordihydrocapsaicin oligosaccharide 115

### *Catharanthus roseus*

Biotransformation of phenolic compounds by the cultured cells of *Catharanthus roseus* 275

### CGTase

Preparation of a new pepper: chemoenzymatic synthesis of capsaicin oligosaccharide and 8-nordihydrocapsaicin oligosaccharide 115

### Chemical inactivation

Studies on the histidine residues in pigeonpea (*Cajanus cajan* L.) urease 81

- Chimeric  
Construction and characterization of chimeric enzymes of the *Agrobacterium tumefaciens* and *Thermotoga maritima*  $\beta$ -glucosidases 43
- Chiral  
Enzymatic synthesis of chiral menthyl methacrylate monomer by pseudomonas cepacia lipase catalysed resolution of ( $\pm$ )-menthol 169
- $\alpha$ -Chymotrypsin  
Stabilization of various  $\alpha$ -chymotrypsin forms in aqueous-organic media by additives 141
- CLIP technique  
Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121
- Condensation  
Influence of the immobilization process on the activity of  $\beta$ -galactosidase bound to Nylon membranes grafted with glycidyl methacrylate. Part 1. Isothermal behavior 175  
Influence of the immobilisation process on the activity of  $\beta$ -galactosidase bound to nylon membranes grafted with glycidyl methacrylate. Part 2. Non-isothermal behaviour 191
- Co-polymerization  
Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121
- Coriolus* laccase  
Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- Cyclohexanone mono-oxygenase (CHMO)  
Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101
- Deglycosylation  
Enzymatic deglycosylation of enfumafungin, a triterpene glycoside natural product, and its chemically synthesized analogues 27
- Delignification  
Polyoxometalates as mediators in the laccase catalyzed delignification 131  
Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- Diazotisation  
Influence of the immobilization process on the activity of  $\beta$ -galactosidase bound to Nylon membranes grafted with glycidyl methacrylate. Part 1. Isothermal behavior 175  
Influence of the immobilisation process on the activity of  $\beta$ -galactosidase bound to nylon membranes grafted with glycidyl methacrylate. Part 2. Non-isothermal behaviour 191
- Diethylpyrocarbonate  
Studies on the histidine residues in pigeonpea (*Cajanus cajan* L.) urease 81
- Dioxygen uptake  
Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- 1,3-Dipalmitoyl-2-butyryl-*rac*-glycerol  
Determining the regio- and tylo-selectivity of calf pregastric lipase 147
- Docking  
Lipase-catalyzed regioselective acylation of resorcin[4]arenes 241
- E. coli* TOP10 [pQR239] strain  
Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101
- Electron transfer  
Comparing the catalytic efficiency of some mediators of laccase 231
- Enantioselectivity  
Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121
- Enzymatic racemization  
Activation of mandelate racemase via immobilization in lyotropic liquid crystals for biocatalysis in organic solvents: application and modeling 91
- Enzymatic resolution  
Microbiological transformations 50: selection of epoxide hydrolases for enzymatic resolution of 2-, 3- or 4-pyridyloxirane 217
- Enzymatic screening  
Enzymatic deglycosylation of enfumafungin, a triterpene glycoside natural product, and its chemically synthesized analogues 27
- Enzyme biocatalysis  
Production of biodiesel fuel from triglycerides and alcohol using immobilized lipase 53
- Enzyme immobilisation  
Influence of the immobilization process on the activity of  $\beta$ -galactosidase bound to Nylon membranes grafted with glycidyl methacrylate. Part 1. Isothermal behavior 175  
Influence of the immobilisation process on the activity of  $\beta$ -galactosidase bound to nylon membranes grafted with glycidyl methacrylate. Part 2. Non-isothermal behaviour 191
- Epoxide hydrolase  
Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121  
Microbiological transformations 50: selection of epoxide hydrolases for enzymatic resolution of 2-, 3- or 4-pyridyloxirane 217
- EPR  
Spectroscopic characterization of a manganese–lignin peroxidase hybrid isozyme produced by *Bjerkandera adusta* in the absence of manganese: evidence of a protein centred radical by hydrogen peroxide 159
- Essential aminoacids  
Chemical mechanism of penicillin V acylase from *Streptomyces lavendulae*: pH-dependence of kinetic parameters 33
- Finite element method  
Activation of mandelate racemase via immobilization in lyotropic liquid crystals for biocatalysis in organic solvents: application and modeling 91

- Galacto-oligosaccharides  
 Synthesis of galacto-oligosaccharides in AOT/isooctane reverse micelles by  $\beta$ -galactosidase 109
- $\beta$ -galactosidase  
 Synthesis of galacto-oligosaccharides in AOT/isooctane reverse micelles by  $\beta$ -galactosidase 109  
 Influence of the immobilization process on the activity of  $\beta$ -galactosidase bound to Nylon membranes grafted with glycidyl methacrylate. Part 1. Isothermal behavior 175  
 Influence of the immobilisation process on the activity of  $\beta$ -galactosidase bound to nylon membranes grafted with glycidyl methacrylate. Part 2. Non-isothermal behaviour 191
- Gene shuffling  
 Construction and characterization of chimeric enzymes of the *Agrobacterium tumefaciens* and *Thermotoga maritima*  $\beta$ -glucosidases 43
- $\beta$ -Glucosidase  
 Construction and characterization of chimeric enzymes of the *Agrobacterium tumefaciens* and *Thermotoga maritima*  $\beta$ -glucosidases 43
- $\alpha$ -glucosidase  
 Site-specific mutagenesis at positions 272 and 273 of the *Bacillus* sp. SAM1606  $\alpha$ -glucosidase to screen mutants with altered specificity for oligosaccharide production by transglucosylation 265
- Glycosidase  
 Kinetic mechanism of  $\beta$ -xylosidase from *Trichoderma reesei* QM 9414 7  
 Enzymatic deglycosylation of enfumafungin, a triterpene glycoside natural product, and its chemically synthesized analogues 27
- Glycosylation  
 Preparation of a new pepper: chemoenzymatic synthesis of capsaicin oligosaccharide and 8-nordihydrocapsaicin oligosaccharide 115
- Graft membranes  
 Influence of the immobilization process on the activity of  $\beta$ -galactosidase bound to Nylon membranes grafted with glycidyl methacrylate. Part 1. Isothermal behavior 175  
 Influence of the immobilisation process on the activity of  $\beta$ -galactosidase bound to nylon membranes grafted with glycidyl methacrylate. Part 2. Non-isothermal behaviour 191
- H-atom abstraction  
 Comparing the catalytic efficiency of some mediators of laccase 231
- Heme protein  
 Spectroscopic characterization of a manganese-lignin peroxidase hybrid isozyme produced by *Bjerkandera adusta* in the absence of manganese: evidence of a protein centred radical by hydrogen peroxide 159
- Heteropolyanion  
 Polyoxometalates as mediators in the laccase catalyzed delignification 131
- Histidine reactivity  
 Studies on the histidine residues in pigeonpea (*Cajanus cajan* L.) urease 81
- Hydrotalcite  
 Some factors affecting the immobilization of penicillin G acylase on calcined layered double hydroxides 65
- Immobilization  
 Mesoporous molecular sieve (MCM-41) as support material for microbial cell immobilization and transformation of 2,4,6-trinitrotoluene (TNT): a novel system for whole cell immobilization 17  
 Stabilization of various  $\alpha$ -chymotrypsin forms in aqueous-organic media by additives 141
- Immobilized enzyme  
 Production of biodiesel fuel from triglycerides and alcohol using immobilized lipase 53  
 Some factors affecting the immobilization of penicillin G acylase on calcined layered double hydroxides 65
- Immobilized imprinting of proteins  
 Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121
- Isoprobrotryan-9 $\alpha$ -ol  
 Biotransformation of the fungistatic sesquiterpenoid isoprobrotryan-9 $\alpha$ -ol by *Botrytis cinerea* 249
- $\beta$ -Keto adipate enol-lactone hydrolase  
 A cold-active esterase with a substrate preference for vinyl esters from a psychrotroph, *Acinetobacter* sp. strain no. 6: gene cloning, purification, and characterization 255
- Kinetic parameters  
 Chemical mechanism of penicillin V acylase from *Streptomyces lavendulae*: pH-dependence of kinetic parameters 33
- Kinetics  
 Kinetic mechanism of  $\beta$ -xylosidase from *Trichoderma reesei* QM 9414 7  
 Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- Laccase  
 Polyoxometalates as mediators in the laccase catalyzed delignification 131  
 Comparing the catalytic efficiency of some mediators of laccase 231
- Laccase-mediator system  
 Polyoxometalates as mediators in the laccase catalyzed delignification 131
- Laccase-mediator system (LMS)  
 Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- Lactonisation  
 Lipase enhanced catalytic efficiency in lactonisation reactions 1
- Layered double hydroxides  
 Some factors affecting the immobilization of penicillin G acylase on calcined layered double hydroxides 65
- Lignin  
 Polyoxometalates as mediators in the laccase catalyzed delignification 131
- Lignin degradation  
 Comparing the catalytic efficiency of some mediators of laccase 231

- Lipase**  
 Lipase enhanced catalytic efficiency in lactonisation reactions 1  
 Production of biodiesel fuel from triglycerides and alcohol using immobilized lipase 53  
 Enzymatic synthesis of chiral menthyl methacrylate monomer by pseudomonas cepacia lipase catalysed resolution of ( $\pm$ )-menthol 169  
 Chemo-enzymatic preparation of resveratrol derivatives 223  
 Lipase-catalyzed regioselective acylation of resorcin[4]arenes 241
- Lipid hydrolysis**  
 Determining the regio- and typo-selectivity of calf pregastric lipase 147
- Lyotropic liquid crystals**  
 Activation of mandelate racemase via immobilization in lyotropic liquid crystals for biocatalysis in organic solvents: application and modeling 91
- Magnetic nanoparticles**  
 Preparation and characterization of YADH-bound magnetic nanoparticles 283
- Mandelate racemase [EC 5.1.2.2]**  
 Activation of mandelate racemase via immobilization in lyotropic liquid crystals for biocatalysis in organic solvents: application and modeling 91
- MCM-41**  
 Mesoporous molecular sieve (MCM-41) as support material for microbial cell immobilization and transformation of 2,4,6-trinitrotoluene (TNT): a novel system for whole cell immobilization 17
- Mechanism**  
 Kinetic mechanism of  $\beta$ -xylosidase from *Trichoderma reesei* QM 9414 7
- Mediators**  
 Comparing the catalytic efficiency of some mediators of laccase 231
- (-)-Menthol oxime methacrylate**  
 Enzymatic synthesis of chiral menthyl methacrylate monomer by pseudomonas cepacia lipase catalysed resolution of ( $\pm$ )-menthol 169
- Molecular modeling**  
 Lipase-catalyzed regioselective acylation of resorcin[4]arenes 241
- Molecular sieve**  
 Mesoporous molecular sieve (MCM-41) as support material for microbial cell immobilization and transformation of 2,4,6-trinitrotoluene (TNT): a novel system for whole cell immobilization 17
- Mutagenesis**  
 Site-specific mutagenesis at positions 272 and 273 of the *Bacillus* sp. SAM1606  $\alpha$ -glucosidase to screen mutants with altered specificity for oligosaccharide production by transglucosylation 265
- 8-Nordihydrocapsaicin**  
 Preparation of a new pepper: chemoenzymatic synthesis of capsaicin oligosaccharide and 8-nordihydrocapsaicin oligosaccharide 115
- Oligosaccharide**  
 Preparation of a new pepper: chemoenzymatic synthesis of capsaicin oligosaccharide and 8-nordihydrocapsaicin oligosaccharide 115  
 Site-specific mutagenesis at positions 272 and 273 of the *Bacillus* sp. SAM1606  $\alpha$ -glucosidase to screen mutants with altered specificity for oligosaccharide production by transglucosylation 265
- Organic solvent**  
 Lipase enhanced catalytic efficiency in lactonisation reactions 1  
 Selectivity of penicillin G acylase towards phenylacetic acid derivatives in amide bond synthesis in toluene 73
- Organic solvents**  
 Stabilization of various  $\alpha$ -chymotrypsin forms in aqueous-organic media by additives 141
- Over-expressed Baeyer–Villigerase**  
 Microbiological transformations. 49. Asymmetric biocatalysed Baeyer–Villiger oxidation: improvement using a recombinant *Escherichia coli* whole cell biocatalyst in the presence of an adsorbent resin 101
- Oxidation**  
 Polyoxometalates as mediators in the laccase catalyzed delignification 131  
 Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- Penicillin acylase**  
 Some factors affecting the immobilization of penicillin G acylase on calcined layered double hydroxides 65
- Penicillin G acylase**  
 Selectivity of penicillin G acylase towards phenylacetic acid derivatives in amide bond synthesis in toluene 73
- Penicillin V acylase**  
 Chemical mechanism of penicillin V acylase from *Streptomyces lavendulae*: pH-dependence of kinetic parameters 33
- Peroxidase**  
 Spectroscopic characterization of a manganese–lignin peroxidase hybrid isozyme produced by *Bjerkandera adusta* in the absence of manganese: evidence of a protein centred radical by hydrogen peroxide 159
- Phenolic compound**  
 Biotransformation of phenolic compounds by the cultured cells of *Catharanthus roseus* 275
- Phenylacetic analogues**  
 Selectivity of penicillin G acylase towards phenylacetic acid derivatives in amide bond synthesis in toluene 73
- Photo-oxidation**  
 Studies on the histidine residues in pigeonpea (*Cajanus cajan* L.) urease 81
- Polyoxometalate**  
 Polyoxometalates as mediators in the laccase catalyzed delignification 131
- Protein radical**  
 Spectroscopic characterization of a manganese–lignin peroxidase hybrid isozyme produced by *Bjerkandera adusta* in the absence of manganese: evidence of a protein centred radical by hydrogen peroxide 159

- Psychrotroph**  
A cold-active esterase with a substrate preference for vinyl esters from a psychrotroph, *Acinetobacter* sp. strain no. 6: gene cloning, purification, and characterization 255
- Pyridyloxirane**  
Microbiological transformations 50: selection of epoxide hydrolases for enzymatic resolution of 2-, 3- or 4-pyridyloxirane 217
- Regioselective acylation**  
Chemo-enzymatic preparation of resveratrol derivatives 223
- Resorcinarene**  
Lipase-catalyzed regioselective acylation of resorcin[4]arenes 241
- Resveratrol**  
Chemo-enzymatic preparation of resveratrol derivatives 223
- Reverse micelles**  
Synthesis of galacto-oligosaccharides in AOT/isooctane reverse micelles by  $\beta$ -galactosidase 109
- Rhodotorula glutinis***  
Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121
- Screening**  
Microbiological transformations 50: selection of epoxide hydrolases for enzymatic resolution of 2-, 3- or 4-pyridyloxirane 217
- Selectivity**  
Determining the regio- and typo-selectivity of calf pregastric lipase 147
- Sesquiterpenoid**  
Biotransformation of the fungistatic sesquiterpenoid isoproboutyan-9 $\alpha$ -ol by *Botrytis cinerea* 249
- Spin state**  
Spectroscopic characterization of a manganese–lignin peroxidase hybrid isozyme produced by *Bjerkandera adusta* in the absence of manganese: evidence of a protein centred radical by hydrogen peroxide 159
- Stability**  
Improvement of enantioselectivity by immobilized imprinting of epoxide hydrolase from *Rhodotorula glutinis* 121  
Stabilization of various  $\alpha$ -chymotrypsin forms in aqueous-organic media by additives 141
- Statins**  
Lipase enhanced catalytic efficiency in lactonisation reactions 1
- Streptomyces lavendulae***  
Chemical mechanism of penicillin V acylase from *Streptomyces lavendulae*: pH-dependence of kinetic parameters 33
- TEMPO**  
Comparing the catalytic efficiency of some mediators of laccase 231
- Theanderose**  
Site-specific mutagenesis at positions 272 and 273 of the *Bacillus* sp. SAM1606  $\alpha$ -glucosidase to screen mutants with altered specificity for oligosaccharide production by transglucosylation 265
- Thermostable**  
Construction and characterization of chimeric enzymes of the *Agrobacterium tumefaciens* and *Thermotoga maritima*  $\beta$ -glucosidases 43  
*Thermotoga maritima*  
Construction and characterization of chimeric enzymes of the *Agrobacterium tumefaciens* and *Thermotoga maritima*  $\beta$ -glucosidases 43
- Totally chlorine free bleaching**  
Biobleaching of pulp with dioxygen in laccase-mediator system—effect of variables on the reaction kinetics 205
- Transesterification**  
Production of biodiesel fuel from triglycerides and alcohol using immobilized lipase 53  
Enzymatic synthesis of chiral menthyl methacrylate monomer by pseudomonas cepacia lipase catalysed resolution of ( $\pm$ )-menthol 169  
Lipase-catalyzed regioselective acylation of resorcin[4]arenes 241  
A cold-active esterase with a substrate preference for vinyl esters from a psychrotroph, *Acinetobacter* sp. strain no. 6: gene cloning, purification, and characterization 255
- Transglucosylation**  
Site-specific mutagenesis at positions 272 and 273 of the *Bacillus* sp. SAM1606  $\alpha$ -glucosidase to screen mutants with altered specificity for oligosaccharide production by transglucosylation 265
- Triacylglycerols**  
Determining the regio- and typo-selectivity of calf pregastric lipase 147
- Triterpeneglycosides**  
Enzymatic deglycosylation of enfumafungin, a triterpene glycoside natural product, and its chemically synthesized analogues 27
- Urease**  
Studies on the histidine residues in pigeonpea (*Cajanus cajan* L.) urease 81
- Vinyl esters**  
A cold-active esterase with a substrate preference for vinyl esters from a psychrotroph, *Acinetobacter* sp. strain no. 6: gene cloning, purification, and characterization 255
- Water activity**  
Selectivity of penicillin G acylase towards phenylacetic acid derivatives in amide bond synthesis in toluene 73
- $\beta$ -Xylosidase**  
Kinetic mechanism of  $\beta$ -xylosidase from *Trichoderma reesei* QM 9414 7
- Yeast alcohol dehydrogenase**  
Preparation and characterization of YADH-bound magnetic nanoparticles 283